

8. Baker, C., et al, 1944. Method of sizing paper. U.S. Pat. No. 2,340,728.
9. Beadle, G., 1915. Process of manufacturing composition board. U.S. Pat. No. 1,125,445.
10. Brown, R., 1980. Pyrolytic methods in organic chemistry; application of flow and flash vacuum pyrolytic techniques. Academic Press, New York.
11. Chatham, H. 1996. Untitled facsimile transmission BOC Coating Technology, Concord Calif.
12. Chervenak, R., 1993. Sprayable wall sealant. U.S. Pat. No. 5,236,499.
13. Crews, IV et al. Process of protecting metallic and wood surfaces using silicate compounds. U.S. Pat. No. 5,205,874.
14. Demetrikakes, P., 1993. What's next for MAP/CAP, susceptors and 'Glassy' film? Packaging, a Cahners Publication. 38:10, pp. 24-26.
15. Devlan, P., 1865. Improved composition for lining journal-boxes. U.S. Pat. No. 51,702.
16. Devlan, P., 1867. Improvement in coating wood, U.S. Pat. No. 63,618.
17. Ellis, G., 1936. Heat and sound insulating composition U.S. Pat. No. 2,041,120.
18. Famighetti, R., ed. 1996. The world almanac and book of facts. K-111 Reference Corporation, Mahwah, N.J.
19. Firth, L., and Welch, E., 1931. Hot top. U.S. Pat. No. 1,819,364.
20. Godfrey, J., 1870. Improvement in roofing compositions. U.S. Pat. No. 109,002.
21. Grunzweig, C., 1899. Manufacture of stone from kieselguhr. U.S. Pat. No. 620,446.
22. Hildreth, E., 1868. Improved composition of matter for forming ornaments. U.S. Pat. No. 74,225.
23. Hoss, C., 1914. Fireproof material, U.S. Pat. No. 1,111,021.
24. Jacobs, M., 1948. Laminated sheet and composition for coating laminae. U.S. Pat. No. 2,438,339.
25. Lowe, W., 1925. Plastic composition for articles of manufacture, U.S. Pat. No. 1,532,908.
26. Luckanuck, J., 1987. Fire retardant composition. U.S. Pat. No. 4,746,555.
27. Lyons, J., 1970. The Chemistry and Uses of Fire Retardants, John Wiley & Sons, Inc. New York.
28. Oelhafen, J., 1925. Wall-board composition. U.S. Pat. No. 1,564,706.
29. Oertly, B., and Fendrich, X., 1868. Improved composition for coating metals. U.S. Pat. No. 80,086.
30. Olney, G., 1899. Composition of matter. U.S. Pat. No. 627,008.

31. Pelletier, A., 1868. Improved composition for manufacturing stone, and for other purposes. U.S. Pat. No. 74,587.
32. Platz, R., 1899. Composition of matter for molding purposes. U.S. Pat. No. 629,600.
33. Ravenscroft, W., and Ravenscroft, W., 1884. Manufacture of articles from wood pulp. U.S. Pat. No. 293,785.
34. Reisch, M., 1992. Paints and coating sales top \$11 billion. C&E News, October, 1992. Pps. 36-76.
35. Saxena, K. et al, 1993. Thermodynamic Data on Oxides and silicates. Springer-Verlag, Berlin.
36. Skalla, F., 1916. Process of molding a compressed fiber composition. U.S. Pat. No. 1,168,831.
37. Stericker, W., 1953. Manufacture of silicate-coated papers. U.S. Pat. No. 2,647,069.
38. Stowell, E., 1925. Fireproofing and insulating composition and process of making the same. U.S. Pat. No. 1,524,676.
39. Vassilevsky, A., et al, 1972. Light-weight high strength cement compositions. U.S. Pat. No. 3,667,978.
40. Wheeler, J., 1895. Process of molding fibrous pulp. U.S. Pat. No. 539,928.

We claim:

- 25 1. A process of imparting fire retardant and moisture resistant properties to a cellulosic material comprising applying and infusing a material consisting of an alkali metal silicate solution, applying energy to said material under sufficient conditions to thereby cause the alkali metal silicate to become water insoluble.
- 25 2. The process of claim 1 wherein the solution application step is selected from the group consisting of soaking and pressure treating.
- 35 3. The process of claim 1 wherein the alkali metal silicate is sodium silicate.
- 35 4. The process of claim 1 wherein the cellulosic material is subjected to complete or partial drying following the application step.
- 40 5. The process of claim 4 wherein the drying is selected from the group consisting of microwaves, lasers, and radiant heat.
- 40 6. The process of claim 3 wherein the sodium silicate solution has a concentration of 0.04-400 g of sodium silicate per kilogram of water.
- 45 7. The product produced by the process of claim 1.
- 45 8. The product produced by the process of claim 4.
- 45 9. The product of claim 1 wherein the product possesses the property of increased hardness and durability.
- 50 10. The product of claim 1 where the product possesses the property of increased fire retardance.
- 50 11. The product of claim 1 wherein the product possesses the property of improved resistance to chipping and peeling.

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